Austrobaileya 3(3): 393–399 (1991)

A REVISION OF *LAMPROLOBIUM* BENTH. (FABACEAE: BRONGNIARTIEAE)

R.J.F. Henderson

Queensland Herbarium, Meiers Road, Indooroopilly, Qld 4068, Australia

Summary

The genus *Lamprolobium* Benth. consists of two species, *L. fruticosum* Benth. and *L. grandiflorum* S.L. Everist ex R. Henderson sp. nov. described here, and is confined to tropical north-eastern Australia. A lectotype is chosen for *L. fruticosum*.

Introduction

As a result of a request for information from Roger Elliot on the variability of *Lamprolobium fruticosum* Benth. for a forthcoming volume of his Encyclopaedia (cf. Elliot & Jones 1990), I came across a specimen labelled as "type" of "*Lamprolobium grandiflorum* S.L. Everist" (AQ 22875) amongst the BRI material of *L. fruticosum*. Because of its overall appearance, it immediately struck me that the specimen represented a species other than *L. fruticosum*, but as it was incomplete and its flowers were heavily insect damaged, I was unable to place it with certainty.

Appended to this sheet is a note by L. Pedley to the effect that (as of March 1982) Everist's name had not been validly published.

I was convinced that it was of a distinct species of *Lamprolobium* when I subsequently came across relatively recent and complete flowering and fruiting material of the same taxon (*Rodd & Hardie* 4515 – AQ 443462) in the remainder of BRI specimens labelled *L. fruticosum*. This was confirmed by my colleague, Mr J.R. Clarkson (Mareeba), who visited the site of collection of the more-recent BRI material and re-examined the plants and made fresh collections of them and others he found in near-by areas.

To justify my former colleague's perception of the material he saw, I herewith formally validate his proposed name *L. grandiflorum* for this second *Lamprolobium* species.

Review of classificatory history

The genus *Lamprolobium* was erected by Bentham (1864) for a single, shiny-fruited, endemic Australian species he considered belonged in tribe Galegeae of Leguminosae (Fabaceae). In the structure of its seeds, however, it seemed to him unrelated to any other genera of this tribe except for the South American *Brongniartia* Kunth and *Harpalyce* DC. He segregated these three genera later as subtribe Brongniartiinae ('Brongniartieae') of tribe Galegeae (Bentham 1865) and this grouping was accepted by Hutchinson (1964) though at the tribal rather than subtribal rank. Even later authors, however, chose to disregard this classification since consideration of many attributes other than seeds suggested to them that *Lamprolobium* has much greater affinities with genera of the Bossiaeeae (Benth.) Hutch. and it was therefore included in that tribe until recently by most workers (Polhill 1981). There, Polhill grouped it with *Plagiocarpus* Benth., *Templetonia* R. Br. and *Hovea* R. Br. in a so-called "Templetonia group" while other genera of the tribe, *viz Platylobium* Smith, *Goodia* Salisbury, *Aenictophyton* A. Lee, *Ptychosema* Benth., *Muelleranthus* Hutch. together with *Bossiaea* Vent., he held to comprise a second group, the so-called "Bossiaea group".

Crisp and Weston (1987) reviewed this grouping and, following cladistic analysis to establish relationships between genera and species of the Bossiaeeae, the Brongniartieae and the allied Mirbelieae, concluded that to render the Bossiaeeae and Brongniartieae monophyletic, the "Templetonia group" including *Lamprolobium* must be transferred to the Brongniartieae, leaving the "Bossiaea group" as the only members of the Bossiaeeae. Their study and conclusions, based on consideration of 73 attributes of 64 taxa, are compelling and support both Bentham's and Hutchinson's earlier views on the relationships of *Lamprolobium*. Its placement in Hutchinson's Brongniartieae is thus accepted here.

The finding of a second species within *Lamprolobium* clearly upsets the generic description as traditionally given and necessitates modification of the key to the group given by Polhill (1981). It does not, however, require a realignment of the genus within the tribe as construed by Crisp and Weston (*loc. cit.*). The attributes of a circumscissile calyx and imparipinnate leaves with broad leaflets, apparently remain as the only unique diagnostic characteristics for this genus in this tribe.

Another species, *Galactia megalophylla* (F. Muell.) J.H. Willis, was originally described as *Lamprolobium megalophyllum* by F. Mueller (Mueller 1875) but it has since been shown conclusively (Willis 1967) that it correctly belongs in *Galactia* P. Br. as Mueller once thought. *Galactia megalophylla* was the manuscript name he used on his herbarium material of it.

Taxonomic Treatment

Lamprolobium Benth., Fl. austral. 2: 202 (1864). **Type:** *L. fruticosum* Benth.

Derivation of Name: from Greek *lampros*, shining, and *lobos*, pod, in relation to the shiny, smooth fruits.

Erect shrubs, often many-branched from near base, densely hairy on most parts. Leaves compound, often reduced to unifoliolate state distally on branches, stipulate, lacking stipellae. Flowers shortly pedicellate, single on ± elongated, solitary, paired or clustered peduncles in axils of upper leaves or leaves at lower nodes of axillary branches. Peduncles bracteolate; bracteoles medial and distal on peduncles, deciduous. Calyx tube circumscissile at base; upper 2 lobes fused to produce a compound retuse or emarginate lobe. Petals yellow, clawed, glabrous. Stamens 10, glabrous, united in lower 3/4 to 7/8 into a cylinder completely open along the ventral (adaxial) side. Anthers alternately basifixed or dorsifixed. Ovary glabrous, flattened, many-ovulate. Stigma consisting of the papillose truncate style tip. Pod flattened, glabrous, many-seeded, shiny. Seeds oblique in pod, separated by bands of pith, conspicuously arillate.

Petals conspicuously exceeding sepals, 15–20 mm long: mature leaflets ± appressed silky hairy, tapered evenly to an acuminate tip .. **L. grandiflorum**
Petals ± equalling or shorter than sepals, 5–8 mm long: mature leaflets ± moderately spreading hairy, contracted abruptly to a short mucro at tip ..... **L. fruticosum**

Lamprolobium grandiflorum S.L. Everist ex R. Henderson, **sp. nov.** *L. fruticoso* Benthamii petalis sepala conspicue longioribus (usque ad duplo longioribus), foliis maturis subter et insuper sericeis et apici acuminato angustatis, et seminibus ± discoideis vel obloideis nec ± reniformis vel ovoideis differt. Frutices 1–2 m alti; folia 1- vel 3- (vel 5-) foliolata; foliola 4–12 cm longa petiolulum inclusa. Lobi sepalorum 6–9.5 mm longi. Petala flava, 15–20 mm longa ungues inclusa. Semina discoidea ad obloidea, 4.5–5.1 mm longa. **Typus:** Queensland. Cook District: 3.6 km E of Lappa to Mount Garnet road, along mining access track turning off 18 km S of Lappa, 28 August 1990, *J.R. Clarkson* 8904 (holo: BRI; iso: DNA,K, L,MBA,MEL,MO,NSW,PERTH,QRS, distribuendi).

Shrub 1–2 m tall; stems single or with several arising from near base, pubescent with a close, dense, greyish or rusty tomentum. Leaves unifoliate, trifoliate or occasionally 5-foliate; stipules subulate, 3–5 mm long; petioles 8–32 mm long; rhachis 0–32 mm long; mature leaflets narrowly elliptic to narrowly ovate, tapering ± evenly to base and apex, 4–12 cm long including petiolule 1.5–10 mm long, 1–2.5 cm wide, sericeous above and below, acute at base, acute acuminate at apex; acumen 1–3.5 mm long, sericeous. Peduncles 2–4 cm long; bracteoles subulate to narrowly triangular, 3–4 mm long, sericeous abaxially; pedicels to 5.5 mm long. Calyx sericeous abaxially, sparsely pubescent adaxially; tube 1.5–4 mm long; lateral and basal lobes narrowly ovate, 7–9 mm long, 1.8–3 mm wide, acute; compound lobe ± rectangular but shallowly notched distally, 6–9.5 mm long, 3.5–8.5 mm across at widest point. Standard ± ovate-orbicular, 15–20 mm long including claw 2.5–4 mm long, 13–15 mm across; wings ± oblong, 16–18 mm long including claw 1.5–2.5 mm long, 3.5–4 mm wide; keel 15–16 mm long including claws 2.5–3.5 mm long, 11–12 mm across (opened out). Staminal tube c. 10 mm long; anthers

elliptic in outline, 1.7–1.8 mm long. Ovary linear, 5–7-ovulate. Stigmatic surface atop and narrower than ± truncate style tip. Legume 35–55 mm long including stipe up to 5 mm long, c. 9 mm wide, tapered evenly or contracted abruptly to short persistent style base. Seeds ± discoid to obloid, 4.5–5.1 mm long, 3.8–4.6 mm wide; mature testa reddish brown to olive green, sometimes mottled with deep red or reddish brown. **Fig. 1.**

Specimens examined: Queensland. COOK DISTRICT: Gurrumba, Apr 1946, *Stevens* Cairns 10139 (BRI); 16 km SSE of Lappa on road following abandoned railway line, 17°28′S, 144°55′E, Apr 1985, *Rodd & Hardie* 4515 (BRI,NSW); 15.8 km S of Lappa on road to Mount Garnet, Aug 1990, *Clarkson* 8902 (BRI); 16.3 km S of Lappa on road to Mount Garnet, Aug 1990, *Clarkson* 8903 (BRI); 3.6 km E of Lappa to Mount Garnet road, along a mining access track turning off 18 km S of Lappa, 17°29′S, 144°58′E, Aug 1990, *Clarkson* 8904 (TYPE).

Distribution and habitat: So far, *L. grandiflorum* is known only from a small area to the north west of Mount Garnet in north Queensland (**Map 1B**), where it grows in eucalypt (*Eucalyptus melanophloia* F. Muell., *E. leichhardtii* Bailey) woodland with cypress pines (*Callitris columellaris* var. *campestris* Silba) on low undulating country in coarse sandy soil.

Phenology: Flowers and fruit have been collected in April and late August.

Conservation status: A coding of 2K, according to the criteria of Briggs and Leigh (1988), seems appropriate at this stage. Its distribution and need for conservation warrant closer study as it may have potential for plant breeding.

Etymology: The epithet is derived from Latin *grandis*, large, and *florus*, flowered, in allusion to the size of its flowers compared with those of *L. fruticosum.*

Notes: The original label for Cairns 10139 in QRS has been associated with specimen Cairns 10129 (QRS 31915) which is a specimen of *Mirbelia speciosa* subsp. *ringrosei* (Bailey) Pedley. Thus the presence of Stephens' original in QRS has not been confirmed. Conversely, the collector and place of collection of Cairns 10129 remain uncertain.

With the current interest in taxonomy of the economically important legumes and the critical study of several different groups within the family in Australia, it is surprising that a plant of such stature and appearance as *L. grandiflorum* should escape detection for so long. In his recently published book on herbaceous and shrubby legumes in Queensland, Hacker (1990) briefly touched on this species in his description of *L. fruticosum* where he recorded that the leaves can be "narrowly pointed". In this he undoubtedly was referring to the leaves of *L. grandiflorum.* His voucher specimens from near Chillagoe, however, are definitely of *L. fruticosum.*

Lamprolobium fruticosum Benth., Fl. austral. 2: 202 (1864). **Type:** Endeavour River, Queensland, July 1819, *A. Cunningham* 242/1819 (lecto (here designated): K).

Erect slender, openly branched shrubs, 0.3–2 (rarely –3) m high, the twigs tending to become pendant; branchlets and young leaves pubescent with a close, dense, usually rusty brown tomentum. Leaves imparipinnate or unifoliate; stipules narrowly triangular, 0.6–1.6 mm long, densely hirsute, caducous; petioles 6–30 mm long; rhachis 0–36 mm long; mature leaflets 1, 3, 5 or 7 per leaf, narrowly ovate to broadly elliptic and ± abruptly contracted at base and apex, 3–12 cm long including petiolule 1.5–4 mm long, 1–3 cm wide, pubescent above and below especially along nerves, obtuse at base, obtuse at mucronate tip; mucro 0.6–1.2 mm long, hirsute. Peduncles 8–12 mm long; bracteoles ± subulate, 1.5–2.3 mm long, densely hirsute abaxially; pedicels 1–1.5 mm long. Calyx densely hirsute abaxially, pubescent adaxially; tube 0.9–1.7 mm long; lateral and basal lobes narrowly ovate to narrowly triangular, 4.5–7 mm long, 1.5–2 mm wide, acute; compound lobe ± trapezoidal but deeply emarginate distally, 5.5–8 mm long, 5.5–5.8 mm across at widest point. Standard cordate, 5–7 mm long including claw 1–1.5 mm long, 5.5–6 mm across; wings ± obliquely oblong, 6–7.5 mm long including claw 1–1.5 mm long, 2–2.5 mm wide; keel ± semi-ovate in outline, 6–7 mm long including claws 1.25–1.5 mm long, 5.4–6.8 mm across (opened out). Staminal tube c. 4 mm long; anthers ovate in outline, 0.5–0.7 mm long. Ovary linear, 5–8-ovulate. Stigmatic surface atop the obliquely truncate, slightly expanded style tip. Legume 30–55 mm long including stipe 4–8.5 mm long, 9–10 mm wide, contracted abruptly and obliquely to the short persistent style base. Seeds ± reniform to ovoid, 5–7 mm long, 3.5–4 mm wide; mature testa olive

green to dark reddish brown or almost black, sometimes reddish brown mottled with black. **Fig. 1.**

Selected specimens (88 examined): **Queensland**. COOK DISTRICT: Pinnacle Creek, 4 miles [6.4 km] N of Walsh River, Jun 1929, *Tardent* [AQ 234637] (BRI); Browns Creek, Pascoe River, Jun 1948, *Brass* 19173 (BRI; ?A *n.v.*); Tozer Gap, Tozer Range, Jul 1948, *Brass* 19509 (BRI; ?A *n.v.*); mouth of Endeavour River, Cooktown, May 1970, *Blake* 23315 (BRI); E of Wrotham Park and W of Chillagoe, May 1970, *Webb & Tracey* 13513 (BRI); 33 miles [53 km] from Mt Carbine towards Cooktown, Jun 1972, *Wrigley & Telford* NQ1267 (NSW; ?CBG *n.v.*); 13 km S of Laura, on Peninsula Development road, Cape York, Oct 1974, *Hind* 622 (NSW); Heathlands Pastoral Station, Cape York, 11°45′S, 142°33′E, Mar 1980, *Morton* 579 (BRI,NSW; ?MEL *n.v.*); Lizard Island, Dec 1974, *Specht & Specht* LI 208 (BRI); ditto, May 1975, *Byrnes* 3195 (BRI); ditto, Aug 1987, *Grimshaw* ALS 64 (BRI); ditto, Sep 1988, *Batianoff* 10101 (BRI); ditto, Oct 1988, *Batianoff* 10257 (BRI); 42 km S of Palmer River, on Peninsula Development road, Apr 1980, *Clarkson* 3060 (BRI; ?K,MBA,MO,NT,PERTH *n.v.*); 9.7 km N of Fairlight, on Fairlight to Palmerville road, 15°41′S, 144°02′E, Apr 1980, *Clarkson* 3254 (BRI; ?K,MBA,NSW,QRS,PERTH *n.v.*); 53 km NNE of Laura, on road to Cooktown, Jun 1981, *Maconochie* 2716 (BRI; ?CBG,K,NT *n.v.*); c. 1 km N of "Gladstone" mine, Stannary Hills, May 1983, *Conn & De Campo* 1253 (BRI,NSW; ?AD,CANB,HO,MEL *n.v.*); 63 km from Chillagoe, on Wrotham Park road, Jul 1983, *Hacker* BH 404 (BRI); 0.5 km SW of dam on top of Mount Mulligan, c. 40 km NW of Dimbulah, Apr 1985, *Clarkson* 5881 (BRI; ?CANB,DNA,K,L,MBA,MEL,NSW,PERTH,QRS *n.v.*); 12 km from Herberton, on road to Irvinebank, Aug 1990, *Clarkson* 8905 (BRI,DNA,K,PERTH; ?MBA,MEL,QRS *n.v.*). NORTH KENNEDY DISTRICT: near Greenvale, Jul 1954, *Blake* 19454 (BRI; ?CANB,K,MEXU,MO,SP *n.v.*); Conjuboy road, Oct 1972, *Althofer* 325 (BRI); 4 km from "Valley of Lagoons" homestead, on road to Ingham, May 1977, *Williams* 77036 (BRI); ditto, Apr 1980, *Williams* 80062 (BRI); Poley Cow Creek, Broken River, 19°28′S, 144°46′E, Apr 1988, *Fell* DF 951 (BRI).

Distribution and habitat: *L. fruticosum* is confined to the north east of Queensland (**Map 1A**) but occurs in a wide range of community types from swampy and sandy heaths to grasslands, low closed forests, eucalypt woodlands (various species) and eucalypt forest (various species). It grows in a wide variety of soil types from dune sands, sandy loams, loams, gravelly clays and skeletal metamorphics on plains, undulating plains, ironstone and sandstone ridges, near-coastal dunes, rocky hillsides and stony mountain tops. Its recorded altitudinal range varies from sea-level to 750 m.

Phenology: Flowers and fruits have been collected from March to November, and probably occur throughout the year.

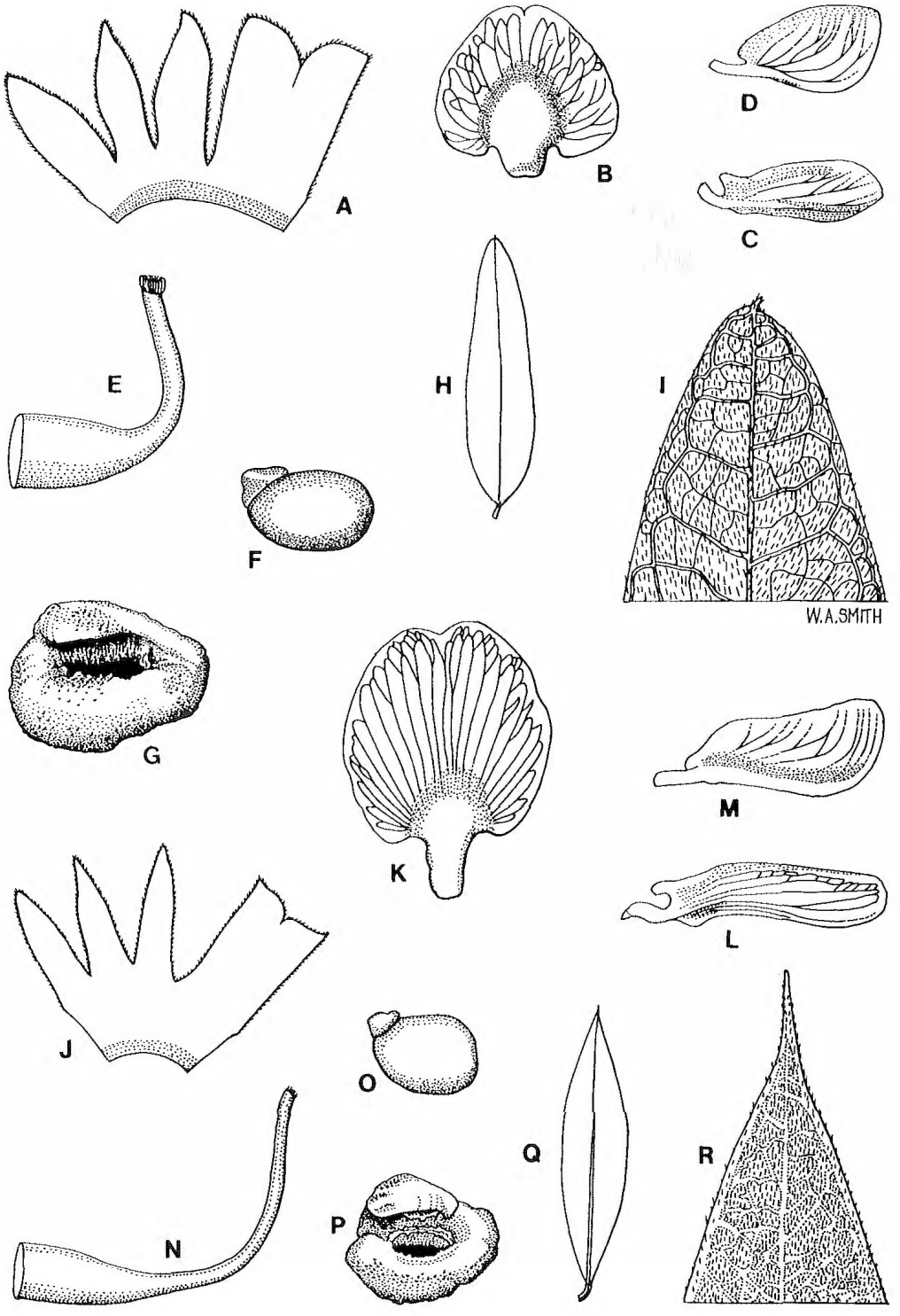
Conservation status: This species is widespread and is conserved in several National Parks, e.g. Lizard Island National Park. Its survival is not endangered.

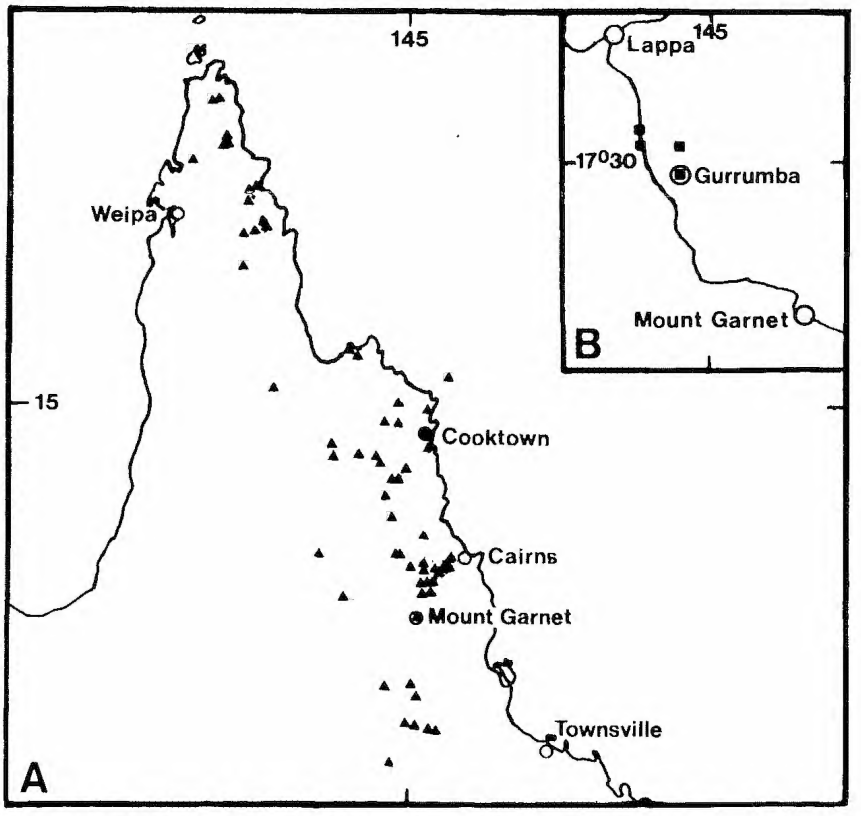
Notes: In describing *L. fruticosum*, Bentham (*loc. cit.*) cited both a Banks and Solander and a Cunningham specimen in his protologue. Only the Cunningham specimen (on two sheets) is at K though a packet containing seeds from Robert Brown's herbarium (presumably from a Banks and Solander specimen) is associated with it, i.e. mounted on one Cunningham sheet. It is clear from the sketches attached to that sheet that this specimen formed the major basis for Bentham's description in his protologue even though the specific epithet was taken up from Solander's manuscript name for the species (*Crotalarioides fruticosa*). Bentham undoubtedly derived the generic name from Cunningham's manuscript *Glycine lamprocarpa* written on the labels associated with his K specimen.

For these reasons the Cunningham sheet at K excluding material from Brown's herbarium is selected lectotype of Bentham's name. A good representative specimen of the species collected by Banks and Solander from Endeavour River is in the separate Banks and Solander collection at NSW (NSW 133343).

Notes attached to two specimens in BRI suggest the species is toxic to livestock but there appears no definite evidence to support these suspicions.

Fig. 1. *Lamprolobium fruticosum*: A. calyx (opened and flattened) showing shape of compound lobe × 4. B. standard (flattened) showing claw and basal lobes × 4. C. wing showing claw and basal lobe × 4. D. one side of keel showing claw and basal lobe × 4. E. style and stigmatic zone × 12. F. seed looking at back of aril × 3. G. aril from front × 12. H. leaflet (typical outline) × 0.5. I. apex of leaflet showing mucro, broad angle of major veins and sparser hairs × 3. *L. grandiflorum*: J. calyx (opened and flattened) showing shape of compound lobe × 2. K. standard (flattened) showing claw and basal lobes × 2. L. wing showing claw and basal lobe × 2. M. one side of keel showing claw and basal lobe × 2. N. style and stigmatic zone × 6. O. seed looking at back of aril × 3. P. aril from front × 12. Q. leaflet (typical outline) × 0.5. R. apex of leaflet showing acuminate tip, less broad angle of major veins and denser hairs × 3. A–E,H,I, Clarkson 8905, F,G, Scarth-Johnson 339A, J-N,Q,R, Clarkson 8904, O,P, Rodd & Hardie 4515 (all BRI).


A
B
C
D
E
F
G
H
I
W.A.SMITH
J
K
L
M
N
O
P
Q
R



Map 1. Distribution of *Lamprolobium* spp.: A. *L. fruticosum*. B. *L.grandiflorum*.

Acknowledgements

I am grateful to John Clarkson (MBA) who searched for *L. grandiflorum* in the Lappa area at my request and who subsequently found three separate populations of the plant. He also provided me with the type material. At BRI, Will Smith prepared the illustrations, Aileen Wood the maps and Andrew Franks SEM photographs of leaf-tips and seeds of both species. This assistance is gratefully acknowledged. An anonymous referee kindly brought the very relevant Crisp and Weston reference to my notice.

References

BENTHAM, G. (1864). Flora Australiensis 2: 202 (1864). London: Lovell Reeve & Co.

BENTHAM, G. in BENTHAM, G. & HOOKER, J.D. (1865). Genera Plantarum 1: 444, 495. London: L. Reeve & Co.; Williams & Norgate.

BRIGGS, J.D. & LEIGH, J.H. (1988). Rare or Threatened Australian Plants. 1988 Revised Edition. Australian National Parks and Wildlife Service Special Publication No. 14. Canberra: Australian National Parks and Wildlife Service.

CRISP, M.D. & WESTON, P.H. (1987). Cladistics and Legume Systematics, with an analysis of the Bossiaeeae, Brongniartieae and Mirbelieae. In C.H. Stirton (ed.), Advances in Legume Systematics Part 3: 65–130. Kew: Royal Botanic Gardens.

ELLIOT, W.R. & JONES, D.L. (1990). Encyclopaedia of Australian Plants suitable for cultivation 5 (Gr–J): 1–512. Melbourne, Sydney, Auckland: Lothian.

HACKER, J.B. (1990). A Guide to Herbaceous and Shrub Legumes of Queensland 199. Brisbane: University of Queensland Press.

HUTCHINSON, J. (1964). The Genera of Flowering Plants 1393/4. Oxford: Clarendon Press.

MUELLER, F. (1875). Fragmenta Phytographiae Australiae 9: 67.

POLHILL, R.M. (1981). Tribe 26. Bossiaeeae (Benth.) Hutch. In R.M. Polhill & P.H. Raven (eds), Advances in Legume Systematics Part 1: 393–395. Kew: Royal Botanic Gardens.

WILLIS, J.H. (1967). Systematic Notes on the Indigenous Australian Flora. *Muelleria* 1: 128.

Accepted for publication 12 February 1991